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THE P·T·REVIEW

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September, 1923

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IMPORTANT NOTICE

The P. T. Review is published quarterly by the American Physiotherapy Association. Membership includes the Review, but subscription may be obtained by sending one dollar ($1.00) to the *Circulation Manager*.

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For advertising rates address the *Advertising Manager*.

Editorial

The Second Convention of the A. P. A.

By MARGARET BLAKE.*

The second annual convention of the American Physiotheraphy Association was held in San Francisco from June 23 to June 27.

The opening meeting on the afternoon of June 23 was perhaps the best that our Association has ever had in regard to both speakers and audience. Hazel Furscott, President of the California Association, opened the meeting with an address, and Ingra Lohne, President of the National Association, spoke about the plans and aims of the convention. It would be a dull group indeed who would fail to respond to the men who spoke to us—Dr. Goldthwaite of Boston, Dr. Tait McKensie of Philadelphia, Dr. Lowman and Dr. Wilson of Los Angeles. But this audience was far from dull, and the messages of these eminent surgeons were received with warmst enthusiasm.

It was particularly pleasing to us to see the many noted physicians and surgeons in the large audience of the afternoon.

The programmes were efficiently conducted and at this convention we were able to manage with two sessions for business, one of which was very short. The main issue discussed was the union of the Physiotheraphy Association with the American Medical Association. It was voted to present a petition to Dr. Wilbur asking for admission to the A. M. A.

Many other questions were brought up and discussed, but very little voting was done. It seemed wiser to wait until action had been taken by the A. M. A., as this in itself would involve many changes.

Since our meeting was held at the same time and in the same building as the American Medical Association, a wide field of interest was opened to us and we were able to hear the papers and discussions by the best medical men in the country, a wonderful opportunity.

Too much cannot be said about the entertainment given by the San Francisco Chapter to its guests. Such generous hospitality was indeed appreciated and was one of the greatest charms of the fascinating city of San Francisco. We wish that every P. T. might

have been there to share the spirit of the convention and the magic of the Golden Gate City.

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* We are, at this time, unable to print the convention material in full.

The Classification Act of 1923.

Under this act there has been established an ex-officio board called the "Personnel Classification Board," who are ascertaining and recording the duties of positions and the qualifications required of the incumbents. General H. M. Lord, Director General of the Budget, is the chairman of the board. They have sent out questionnaires to the Field Divisions and from these they will try to get the results contemplated by the statute.

Does the practical application of the Federal Classification Law place the Aides in the professional or the sub-professional service? Following is a concise description of the two services and the range of salaries in each. If anyone can see it in their power to influence this board in a way that will help put us in professional service—where we belong—it will help not only the service aides, but the profession as a whole.

No. 516, 67th Congress (H. R8928). An act to provide for the classification of civilian positions within the District of Columbia and in the field service—to be called "The Classification Act of 1923." The professional and scientific service shall include all classes of positions, the duties of which are to perform routine, advisory, administrative, or research work which is based upon the established principle of a profession or science, and which requires professional, scientific, or technical training equivalent to that represented by graduation from a college or a university of recognized standing. There are five grades in this service with salaries ranging from $1860 to $6000 per annum.

The sub-professional service shall include all classes of positions, the duties of which are: to perform work which is incident, subordinate, or preparatory to the work of employees holding positions in the professional or scientific service, and which requires or involves professional, scientific or technical training of any degree inferior to that represented by graduation from a college of recog-

nized standing in this service. This service is divided into seven grades—with salaries from $900 to $3000 per annum.

The Hospital Library and Service Bureau, 22 E. Ontario St., Chicago, is at your service with information and medical literature.

Book Notice

Miss Dorothea Crowe in conjunction with Dr. J. W. Sever is compiling a text book on exercises for fracture cases. It will be of great interest and value to those dealing in this branch of physiotherapy.

New Members

Alberta Brownell, Weston State Hospital, Weston, Mass.
Mildred Elson, Mayo Clinic, Rochester, Minn.
Ora N. Irving, 53 White Street, Haverhill, Mass.

Five Hospitals Close

(Copied from the Re-aide Post)

Hospital No. 25, Houston, Texas, is being closed.

Hospital No. 35, St. Louis, Missouri, has been closed.

Hospital No. 30, Chicago, closed.

Hospital No. 75, Colfax, Iowa, has been closed.

Hospital No. 83, Mobile, Alabama, is being closed.

With the closing of the Veterans' Hospital in Chicago the largest group of patients was sent to the Speedway Hospital, Maywood, Illinois, another group to the hospital at Great Lakes, Illinois, and a third group to the U. S. Veterans' Hospital, Milwaukee, Wisconsin.

Every woman who aspires to lead a full life should have these qualities: loyalty, understanding, dignity, hospitality, courage, simplicity. The Big Six I call them, and the greatest of these is Loyalty.

—Mrs. Warren G. Harding.

Common Abnormalities of the Feet

By HOWARD MOORE, M. D.

Read Before the Boston Physio-Therapy Association

February 13, 1923*

YOU have asked me to discuss a very important subject and one to which a great deal more time could be given than we have at our disposal this evening. It will be impossible, therefore, to go much into detail and the subject will be considered somewhat informally and particularly from the point of view of the physio-therapeutist.

The human foot is a very interesting and remarkable mechanism. If used naturally, it is capable of great service, but if abused, it fails to render efficient service and becomes, frequently, a source of suffering to the individual to whom it belongs.

"Foot troubles" and civilization go together, and it appears to be a fact that the more civilized a people are, the more common are foot troubles among them. These foot conditions are rarely, if ever, seen among savages who go bare-footed, or wear loose, flexible coverings on their feet. Hard-wood floors, paved stones and tar sidewalks have made necessary some covering to protect the feet. This alone would tend to cause weakness, because a covering, to be efficient for protection, must also restrict action and therefore weaken. Moreover, fashion has decreed coverings which frequently distort and deform and we have, therefore, two factors in civilization which are responsible for much suffering.

These foot conditions are extremely common. There are several concerns making artificial supports whose individual daily output is in excess of 10,000 pairs. There is not a shoe store of any size which does not now sell so-called orthopaedic shoes, of which there are a great variety. One frequently sees in the clinics of large hospitals a daily attendance in the foot room of many cases and patients suffering from foot conditions. They also make up a considerable part of the orthopaedic work in private practice.

Brief consideration of the anatomy of the foot will assist materially in facilitating an understanding of the various conditions which come under the general classification of foot trouble. If one examines the under surface of the skeleton of a foot one finds that

it can be divided longitudinally, for purposes of description, into two parts which are quite different in their general characteristics. The outer portion, made up of the os calcis, cuboid and the two outer metatarsals, is low, is made up of comparatively few bones firmly held together, and therefore, appears to be definitely the weight bearing portion of the foot. The inner half consisting of the os calcis, the astragalus, the scalphoid, the three cuneiforms and the three inner metatarsals, is composed of more bones, smaller

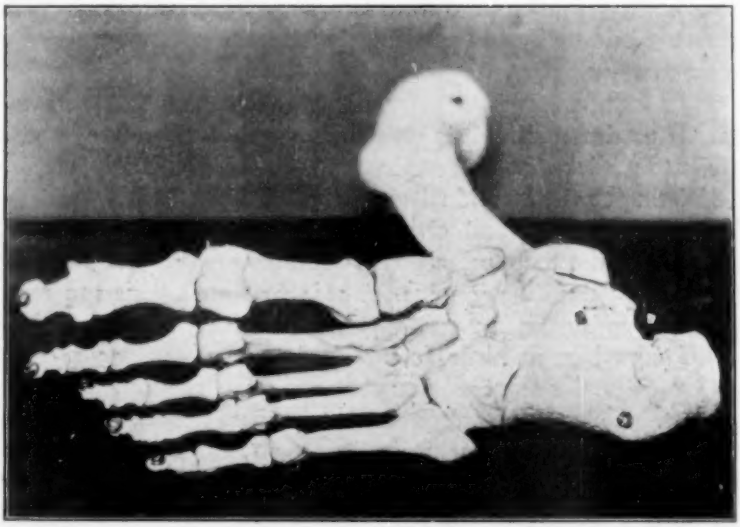

Figure 1

in size, is higher, more flexible, and therefore appears to be the portion of the arch which provides the foot with its spring. (Fig. 1).

Considered as a whole, the long arch of the foot is not symetrical. Its posterior leg is short, descends sharply and is stable. The anterior portion is longer, is composed of many more bones and is less firmly braced than the posterior pillar. The weight of the body comes down to the foot well back towards the heel, in other words, over the posterior pillar of the arch. For passive weight bearing, then, the posterior pillar of the arch appears to be the weight bearing pillar; the anterior portion, that which provides the foot with flexibility and spring. This means that in passive weight

bearing, as in the relaxed standing position, the weight is borne on the heels. Of course, preparatory to movement or action, one stands with the weight forward on the balls of the foot. (Fig. 2).

The transverse arch of the foot is made up of the metatarsal bones and is a patent arch, normally, in passive use of the foot and in active use of the foot, except during that portion of the step when the weight is on the ball of the foot. One important factor in maintaining the patency of this arch is ability to spread and flex the toes.

As has been suggested, the foot has two functions to perform: that of passive support as in standing, and the lever function which

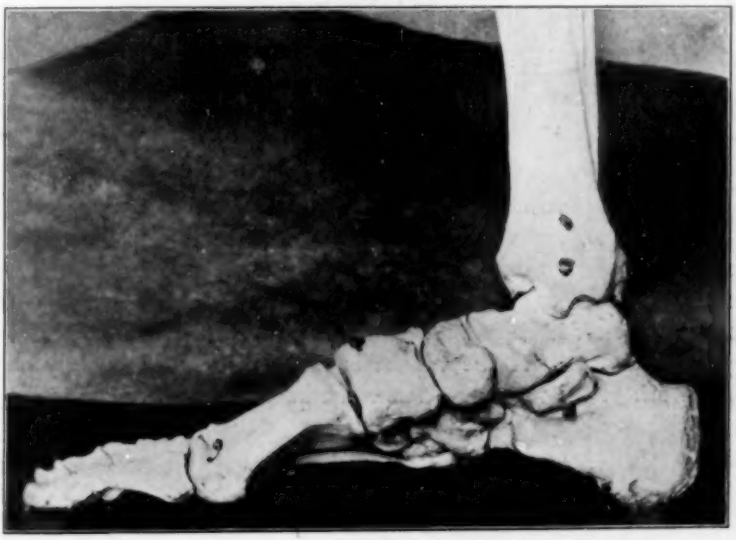

Figure 2

serves to lift and propel the body forward in walking or running. In the performance of these two functions, certain changes may take place in the appearance and balance of the foot, which are within normal limits. When the foot is used as a passive support the muscles play but a small part in maintaining its posture. Motions are allowed in the joints, due to the elasticity of the ligaments and the concave inner border of the foot becomes convex and

the long arch is somewhat depressed. On the other hand, used actively, the muscles are engaged, the arch is held high, the inner border of the foot is concave, the outer border convex and the weight is well over the foot. (Fig. 3 b). In passive support, the foot tends to assume the characteristics of the weak foot type. (Fig. 3 a).

Another reference to the skeleton of the foot will show that the bearing surface of the heel is well to the outer side of the foot and the weight of the body is transmitted to the foot through the tibia, well towards the inner side. There is definite reason, therefore, why the inner border of the foot would become prominent and the arch depressed and these characteristics of the weak foot would become established, were it not for a definite provision against this taking place. This provision exists in the inequality of the strength of the lateral balancing muscles of the foot. The adductors are stronger than the abductors in the ratio of about 10 to 7. (Fig. 1).

During walking the foot serves as a lever. The distal heads of the metatarsals form the fulcrum and the calf muscles supply the power. The postures assumed are briefly these: the long axis of the foot is approximately parallel to the direction of locomotion, the weight is borne momentarily upon the heel, then upon the outer border of the foot, then upon the heads of the metatarsals and toes, as the heel is raised. Because of the difference in the length of the metatarsals, if the weight is to be distributed equally over the breadth of the fulcrum, there must be a slight degree of intoe.

Bearing in mind the anatomy and physiology of the foot, as thus briefly referred to, can you imagine the foot performing its functions freely and normally in some of the shoes which are commonly worn. The elevation of the heel throws the centre of gravity forward, so that a greater part of the weight of the body must be supported by the anterior leg of the arch, than it is designed and intended to bear. This means strain throughout the foot. Added to this is the strain caused by the distortion of the outer border of the foot by the curved shanks of the shoes. The bearing surfaces of the heels is small as a rule and the support or balancing is unstable. The narrow pointed toe of the shoe so constricts the foot that there is little chance for spring in the transverse arch. The toes are given no chance to spread and are deprived of most of

their function during walking. The toes are frequently crowded back and flexed. There is much pressure irritation to the skin. In addition to this, the use of the foot is so disturbed that normal gait is practically impossible. (Fig. 5).

The more common of the abnormalities which result will now be briefly considered.

The most common foot condition is that known as weak feet, or pronated feet. It is a condition which is present to a certain degree in perhaps 90% of all individuals. It is the result of improper use of the feet. This may be through the wearing of an ill fitted shoe, or one which restricts the foot action, or to perversion of the functioning of the foot action in other ways, or to a disproportion between the time the foot is used actively and the time it is used passively.

Figure 3

Figure 4

The shoe is the most important of these three factors. A great many cases especially in children are seen, however, which are unquestionably the result of the careful efforts of the parent or teacher to make the child use the foot in an unnatural way, such as the out-toe position. Frequently mothers bring children to orthopaedists to ask them how to correct a tendency to toe-in which the child presents. There must be reasonable proportion between the time the foot is used actively and the time it is used passively. A clerk standing passively all day with little opportunity to walk, or a traffic officer standing still all day fails to get the exercise which

is necessary to maintain proper lateral balance of the feet.

The characteristic physical signs of pronation are an exaggeration of those characteristics which the foot presents in passive support. The inner border of the foot is convexed instead of concaved, the inner ankle is prominent, the outer border of the foot is concaved instead of convexed, the longitudinal arch is somewhat depressed and the foot is usually everted. If the strength of the abductor and adductor muscles of the foot is tested it will be found that the normal ratio in these muscle groups has been changed. Frequently the abductors are found to be much stronger than the adductors, the reverse of what is true under normal conditions.

The symptoms complained of are usually lameness in the feet and lower legs, a feeling as if the normal spring had gone from the feet. Patient becomes easily fatigued from standing or walking. Occasionally there is discomfort in the knees or lower back from compensitory strain. The causes are improper shoe, disproportion in time of active and passive use of the feet and improper use of feet such as standing or walking with the feet everted or in the out-toe position.

The remedies are first of all, remove the cause. The patient should be shown how to stand and walk and he should be told that this is one of the most important factors in obtaining relief. A proper shoe should be prescribed. The characteristics of such a shoe will be briefly enumerated here. The inner border of the shoe should be practically straight from the end of the first toe to the curve of the heel and practically straight on the outside from the little toe to the heel. The bearing surface of the heel should be nearly as large as its seat. It should be low. The shank of the shoe should be broad. The bearing surface across the ball of the shoe should be approximately the width of the bearing surface across the ball of the foot. From the ball forward the shoe should be long enough to avoid any back pressure on the ends of the toe. (Figs. 5, 6 and 7).

The question frequently arises as to choice between flexible and stiff shank shoes. When artificial support is needed such as those in cases which present irritation in the joints from static strain or in those individuals whose routine necessitates much standing rather than walking the stiff shank is indicated. On the

contrary, in an individual who has a fair proportion of time spent in exercise and who does not present acute lameness, the flexible shank is indicated. A wedge in the inner anterior corner of the heel is usually advisable and it is frequently necessary to supplement this slight wedge with a definite Thomas heel, the characteristics of which are forward extension on the inside, a slight amount of in-flare and a definite wedge.

Figure 5

Exercises to restore strength and balance to the muscles of the lower legs are indicated in all cases except those presenting symptoms of acute irritation, and in those, after the acute irritation has been relieved. This may be brought about by spiral straps. These straps are applied in the following manner: the foot is held in

a somewhat over-corrected position and straps of adhesive about one inch wide are applied to the foot and inner aspect of the lower leg in a slight spiral direction in a way to maintain this correction during weight bearing.

The exercises most commonly used are the following. These may be called the fundamental exercises, because the others are modifications of them.

1. Patient stands with feet about six inches apart and slightly toed in, maintaining balance by holding on to the back of chair or foot of bed. The patient raises weight alternately on toes and heels. In doing this exercise three things are important:

a Maintain the in-toe.

b Keep the weight well over on outer border of feet.

c Do exercise slowly and maintain good body posture throughout the exercise.

2. Patient stands as in No. 1, lifts the inner borders of feet so that the weight is well over on the outer side; feet are adducted and at the same time toes are strongly flexed. Patient should exercise care to do the exercise slowly, maintain good posture and avoid returning to pronated position when relaxed.

3. Patient sits with legs crossed, strongly dorsi flexes the foot, then fully extends in the axis of the leg and returns to dorsi flexed position by circumducting the foot through a half circle to the inside. In this exercise the direction of the toes describes first the straight line of full extension, then the half circle inward and upward.

4. The toes are exercised in flexion in various ways, such as picking up objects, curling the toes around the rung of a chair, or flexing them over the edge of a book or block upon which the foot rests. It is important in doing this exercise to not only flex the toes in the inter-phalangeal joints, but also in the metatarso-phalangeal joints.

The exercises should always be done with the feet bare, preferably twice daily. The patient should be cautioned against overdoing them at first. Each exercise may be done three or four times to begin with and one added daily or every other day until patient is doing each one about eight times.

Another measure used in the treatment of these conditions with much benefit is the contrast bath. This should follow the exer-

cises and is best done in the following manner. The feet are immersed alternately in hot and cold water, thirty seconds in the hot, five in the cold and about four to six times in each.

Much is heard about flat feet. It is a term rather carelessly used and it is frequently a misnomer. The condition does exist, but it must be understood that a flat longitudinal arch may be perfectly normal. In other words, it may be anatomical rather than pathological. The colored race and many of the savages have very low longitudinal arches and frequently have feet which give very efficient service with no symptoms or signs of weakness or other irritation. On the other hand, a person may acquire a weakness in the feet which results in a dropping of the longitudinal arch.

Figure 6

Figure 7

This is usually accompanied by a shifting of the weight bearing line inward, which accompanies pronation.

The characteristic signs are usually those of pronation, together with a lowering of the longitudinal arch. In a great majority of these cases there is a tenderness over the inner border of the foot at a point corresponding to the anterior or posterior border of the scaphoid. The symptoms are usually those of the pronated feet, but may be more severe in degree. Occasionally a patient is seriously disabled and finds himself unable to get about.

cause should be removed. Many times it is necessary at first to artificially support the arches by means of metal or flexible supports. Proper shoes should be prescribed. In the great majority of cases the stiff shank should be selected. Patient should be

directed to use his feet properly. Spiral straps may be used. After the symptoms of acute irritation have subsided, the exercises and contrast baths described under the treatment of pronated feet should be used.

The flat transverse arch is a very common condition, especially in women. The average woman wears a shoe which is pointed and holds the toes laterally compressed and the high heel throws the weight forward on the ball of the foot and usually the toes are held back in position of dorsi-contraction. The ends of the metatarsal bones are forced down and the transverse arch is eliminated. Anterior metatarsalgia frequently accompanies this condition and many of them are known as the Morton toe condition. In this condition the nerves to the fourth toe are the ones irritated.

The physical signs are prominence of the second, third and fourth metatarsal heads on the bearing surface of the foot. Frequently there is present a calloused condition of the skin under these metatarsal heads. The toes are frequently found dorsi-contracted. The symptoms are soreness in ball of the foot, stinging and burning of toes and frequently neuralgic pain from the base of the toes extending up through instep most commonly from the base of the fourth toe up. The causes already suggested are improper shoes, especially with reference to pointed toe and high heel.

In treatment remove the cause and substitute for the improper shoe one which has the straight inner border and plenty of toe room. The transverse arch strapping, which consists of narrow pieces of adhesive transversely across the metatarsal portion of the foot on its under side, is of value, the transverse arch being held up during the application of the straps. This strap may be supplemented by a felt pad cut to fit under the middle metatarsal bones. Exercises should be given after the preliminary treatment by supports.

Anterior metatarsalgia is a neuralgic condition of the metatarsal nerves and is due to a flattening of the transverse arch, therefore, the same measures suggested for the preceding condition will apply to this condition.

Hallux valgus is also a common condition, specially among women, and is characterized by a turning outward of the first toe and a prominence of the first metatarso-phalangeal joint on the inner side of the foot. It is due to the pushing outward of the first toe

by wearing of an improper shoe. At first there is little discomfort or disturbance except that due to a prominence of the joint. The bursa over the inner aspect of the joint becomes irritated from the shoe pressure and the irritation may extend inward to involve the joint structures. The joint may change in time so that the deformity is fixed. The toe cannot be brought back into position even with the application of force. The margin of the joint, especially on the metatarsal side, may present definite exostosis which varies in extent and degree in different individuals seen. The degree of this deformity varies a great deal and may be just a slight turning outward of the toe or a marked deformity in which the great toe has to lay over or under the outer toes. The physical signs in addition to the deformity may be a redness over the joint from the inflamatory reaction and frequently accompanying this condition is a flattening of the transverse arch. (Fig. 4).

The symptoms are usually those of discomfort in the joint and those associated with the transverse arch condition, which is also present. The treatment of this condition varies with the degree of the deformity. In all cases the cause should be removed, proper shoes fitted if joint changes have not occurred. A toe post in the shoe, bunion splint, active and passive exercises and proper use of the feet, may relieve the condition. If joint changes have occurred operative correction is usually necessary.

Another condition of the great toe is known as Hallux rigidus and is a fairly common condition. There is limited motion, particularly between first metatarsal and the proximal phalanx. There is occasionally swelling of the metatarso-phalangeal joint and frequently exostosis. There is not, however, the turning outward of the great toe as in the hallux valgus deformity. The symptoms are pain in the great toe and disability due to stiffness. Causes are usually irritation from improper shoe or from trauma, such as stubbing the toe or injuring the joint by an object dropped upon it. The condition is frequently relieved by proper treatment, which consists of the fitting of proper shoes, exercises, massage and occasionally operation.

Hammer toes are frequently seen and are characterised by extension at the metatarso-phalangeal joint and flexion at the interphalangael joint. There is frequently callous over the prominent joint and at the end of the toe where it rests upon the ground or sole

of the shoe. The cause is usually a short shoe and the deformity frequently occurs in an individual who has an extra long toe, one which projects beyond its neighbors.

This deformity can be frequently relieved by a strapping applied in the following manner. Two narrow straps of adhesive are used. The toe is flexed at the metatarso-phalangael joint and one strap of adhesive is placed with its middle over the proximal phalanx, adhesive side up. It is carried under the proximal phalanges of the adjacent toes. In this way the toe is held flexed at its base. The toe is then extended in the inter-phalangael joint and the second piece of adhesive, sticky side down, is carried under the second phalanx of the affected toe and over the corresponding phalanges of the adjacent toes. This holds the toe extended in the inter-phalangael joint. This strapping frequently applied will result in stretching of the shortened ligaments and tendons. Operative correction, however, is frequently necessary.

There is one other condition which should be given consideration at this time and that is, corns. Corns are so well known to most of us that it is not necessary to enumerate the physical signs and symptons. Corns are always the result of irritation, either pressure or friction. The cause, therefore, in practically every case is an improperly fitted shoe.

The treatment consists in first removing the irritation. Proper shoes should be selected and properly fitted. They should neither be too big nor too small. Occasionally temporary relief can be obtained by a protecting ring of adhesive plaster or soft felt. Corns should not be irritated by the use of files or sand paper but should be kept soft by a daily soak in hot soapy water and the frequent application of an oil, preferably of vegetable or animal nature. Castor oil works very well in this respect. Time can be saved by trimming off the outer portion of thickened skin with a sharp scalpel or razor blade. Great care should be exercised, however, in this procedure to avoid cutting which may result in infection.

These conditions have been considered very briefly but it is obvious that in most of them physio-therapeutic measures are of extreme importance and many times are the only factors involved in their treatment.

It seems appropriate at this time to remind you of the difference between carrying out these measures under supervision and assum-

ing the responsibility for their selection. When you are in doubt, seek counsel and advice. In this way you may relieve yourselves of much responsibility which you have no right to assume. Incidentally, in doing this, you will command the respect of your patient and the consultant.

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* The illustrations printed with this article were presented to the REVIEW by Dr. Moore.

S. O. S.

An Aide, graduate of the New Haven School of Physical Education, with experience in P. T., wishes a position, preferably in New England or New York States. Apply to Margaret E. Greeley, Plymouth, N. H.

Physiotherapy Equipment and office available for an operator during the morning hours. Write, Suite 309, 419 Boylston St., Boston.

THE COMPASS

Four things a man must learn to do, if he would make his record true;
To think without confusion clearly, to love his fellowmen sincerely,
To act from honest motives purely, to trust in God and Heaven securely.

—*Henry Van Dyke.*

Keep the telephone of your mind forever transmitting thoughts of love, purity, joy and health; then when disease, sorrow, lust or hate try to call you up, they will always get the "busy signal."

After a while they will forget your number.

—*Come Back.*

APTLY PUT

"Papa, what is a pedestrian?"

"An individual, my son, that is always found in front of automobiles."

Is There Any Evidence to Suggest That Poor Posture Bears Any Casual Relation to Poor Health in Children?*†

(Reprinted from "Mother and Child," Vol. 3, No. 1, January, 1922. Published by the American Child Hygiene Association, Baltimore, Md.)

ROBERT B. OSGOOD, M. D., Boston

PERHAPS two purposes may justify the presentation of a paper before experts. One is to bring them something new, and the other is to try to answer a question which these experts are, or ought to be asking. And so, since I have nothing new to bring you, the title of my own paper is in the form of a question which I think you ought to be asking, and the paper will be an attempt to answer the question; and this answer you have a perfect right to demand.

BODY FORM TYPES

Different human body form types have been recognized for many years, in the anthropological studies of Treves and Bean, the autopsy records of Bryant and in the anatomical analyses of Goldthwait. At least three types are familiar to all of us: the stout, stocky, rather placid child; the slender, lanky, rather highstrung child, and the mean between these two, who is neither too fat, nor too thin, too dull nor two precocious. This neutral, or third type, we may consider the ideal or normal type for the erect human biped, but this does not mean that it is necessarily the usual type. Various names have been given to these types. Bean speaks of the heavy type as the hypo-ontomorph or herbivorous type, the light as the hyperontomorph or carnivorous type, and the neutral as the mesotonomorph or normal type. It is the hyper-ontomorph or carnivorous type which most concerns us, for this is the congenial visceroptotic type in which faulty posture is most prone to occur.

ANATOMICAL CONSIDERATIONS

The anatomical findings in this type are interesting and fairly constant. Bryant's three hundred autopsy records show that this type is associated in a large percentage of cases with a narrowed chest, abnormal intestinal adhesions, and frequently with ileal stasis. Bean has observed 1,002 patients and performed three hundred and

seventeen autopsies, and he finds that the stomach is small and low, J shaped and far to the left. The liver is small and low, vertical and far to the right. The small intestine is short and of small caliber. The colon is long, with a low hepatic flexure, a high splenic flexure, and the transverse portion a festooned, low-hanging loop with a long mesentery. The clinical records show these individuals peculiarly susceptible to tuberculosis, insanity, and many of the so-called nutritional diseases.

Goldthwait's study of frozen sections makes it evident that the faults of posture and relaxed abdominal walls common to this type must predispose to a sagging of the viscera and a possible interference with their blood supply. These conditions strongly suggest interference with the visceral function.

PHYSIOLOGICAL CONSIDERATIONS

This brings us to the physiological considerations. No work has been more important in this connection than that of Professor Cannon. He has established the fact that a proper tone of the muscle fibres of the intestine is necessary for activity of the digestive processes. The lack of tone may be due either to a failure of nerve impulses which maintain the necessary tonic state, or to a predominance of those impulses which inhibit it. The vagus nerves experimentally are found to be largely responsible for establishing and maintaining this desirable tone of the stomach and small intestine, while the sympathetic system is influential in depressing it. It is probable that through the vagi nerves the actual size of the contractile stomach is actually adapted to the varying amount of food. Baylis and Starling seem to have proved that the vagi nerves convey mostly motor nerves to the small intestine also, and Meltzer has seen the caecum or first portion of the large intestine in a rabbit strongly contract on stimulation of the vagus. We are to bear in mind, therefore, that it seems definitely proved that anything which inhibits the passing of impulses down the vagi may lower the tone of the stomach and intestinal musculature and may be expected to disturb digestion and the proper assimilation of food and affect nutrition.

We really know comparatively little about the Sympathetic Nervous System. We may dissect out its ganglia or little brains and trace many of their fibres in the motor and sensory nerve cords.

We are learning some of the exquisite adjustments of the mysterious glands of internal secretion which are brought about by this system. Perhaps some day someone will leap to proper conception of its entire mechanism as Harvey did to the understanding of the circulation of the blood, but all we can do at present is to recognize its existence, discover some of its controls, and learn to know some of the conditions which disturb the normal action of this autonomic nervous system.

Have we any right to believe that faulty posture and the concomitant sagging of the organs may in any way affect the passage of nerve impulses down the vagi and lessen the tone necessary to proper digestion? We know that stretching of motor nerves inhibits their action. A common method of relieving sciatic pain until the more basic causes of sciatica came to be better understood was to mechanically stretch the sciatic nerve. We are sometimes alarmed at a complete paralysis of a sciatic or other nerve supply which occurs temporarily after certain violent manipulations to reduce an old dislocation or correct a malignant of bones.

We know from X-ray studies that in the visceroptotic child the stomach occupies a much higher position in recubency than in the erect position. At night we may conceive the vagi to have taken up slack as it were. The child eats a breakfast and the food filled organ descends several inches; the nerves must accommodate themselves to this new position and they may well have difficulty in so doing.

It seems to be a well-established fact that in certain cases showing the common faulty posture of extreme forward curve of the lumbar spine, called lordosis, albumin appears in the urine. This may be made to disappear when the posture alone is corrected, and may be re-induced by an assumption of the old position. This so-called lordotic albuminaria may well be connected with mechanical disturbance of the Sympathetic System, because of the abnormal vertebral attitude. Certain bladder disturbances also associated with faulty posture and visceroptosis are frequently relieved by simple correction of the posture.

The muscles of the viscera are involuntary muscles. We have no conscious direct control over them, but the action of skeletal muscles is subject to our volition. However, muscle tone is as necessary to our skeletal voluntary as to our visceral involuntary

muscles. Sherrington, in an article on Postural Tonus, finds that this slight contraction of the muscles which is necessary to maintain our trunk and extremities in various positions of repose, but against the laws of gravity, is confined to those skeletal muscles which maintain the animal in the erect attitude. If the cerebrum or thinking portion of a cat's brain be removed, this reflex tonus still exists in those muscles which are concerned in standing and in tightening the abdominal walls. In this decrebrated preparation one may modify the tonus in various ways. If the cat's head is placed in such a position as it would assume in looking under a shelf, its front legs bend and the tension in the muscles of the hind quarters increases. If the head and neck be titled up in the position of observing an object high up, the opposite phenomenon obtains. It may be made to even stand upright unsupported. Magnus & de Klein have by other experiments also demonstrated that posture has a definite relation to tonus.

From the opposite point of view physiology suggests the most intimate connection between general debility or asthenia and digestive processes. Cannon has called attention to the fact that there is a most remarkable responsiveness to general lowered vitality. In animals suffering from distemper and in whom the muscles are relaxed and toneless, food will lie in the stomach and intestines all day. Rage, fright, anxiety, have the same general effect. These children whom we are discussing certainly give evidence of lowered vitality. We may question, if we will, which came first, the hen or the egg, but they both contain food for thought, and the one produces the other.

The Roentgenological studies of Dodd and Morrison have noted the excursion of the diaphragm to be much less than normal in cases of visceroptosis. The costal angle is narrow, and the chest as well. Shallow breathing must represent imperfect aeration. Life insurance figures indicate that there is a close relation between the quality of the risk and the amount of possible expansion.

So much then for the anatomical and physiological and Roentgenological evidence that poor posture and the usually accompanying visceroptosis may bear some casual relation to poor health in children. It is very easy to bring forward a mass of clinical evidence, but this has been already well done by Brown and Talbot, Bryant and others. A sufficient number of post hoc's suggest strongly propter hoc's.

I wish this morning to state the conviction of twenty years' work that there is the most intimate connection between health and elimination. This must seem a distressing trite statement, but conviction is also strong that far less attention is still paid to the matter than its importance deserves. The story of the famous and eminently successful Dutch physician is apropos. His practice was enormous and wonderfully efficient. He was supposed to have written the secrets of his success in a great book which he kept locked. At his death there was sharp rivalry as to who should obtain possession of the priceless manuscript. In the end a learned medical society purchased the locked treasure, and with public spirit appointed a day when it should be unlocked and its reading begun. The interested audience assembled. On the first page was written, "Keep your head cool," on the second page, "Keep your heart warm," and on the third page, "Keep the bowels open," and there was no more.

Daily bowel movement does not always mean complete evacuation. Frequent movements suggest imperfect elimination. Joint symptoms of a rheumatic nature, often in their early stages almost indistinguishable from an early tuberculosis, occur as a direct result of faulty elimination. Sir Arbuthnot Lane may be extreme in his treatment, but he has sensed a truth. Reed and others have shown that epileptic seizures may be of intestinal origin. We have had referred to us many cases of convulsion in children, in which even the family had associated sluggish bowels with the attacks and in which, after purely medical experts had failed, postural training, abdominal massage, perhaps in combination with retentive and supporting brace, have been followed by a cessation of the distressing complex. The same is true of certain cases of cyclic vomiting.

Another large class of cases is those in which, despite the efforts of most skillful pediatricians, there seems to be an inability to gain weight and an associated or threatened asthenia. The child may not be sick, but surely is not well. These cases respond in a sometimes remarkably satisfactory way to postural treatment. The nervous, intractable disposition becomes more stable, and weight increases.

It will probably be easier to illustrate good posture by photographs of it than by description, but we may perhaps write a legend underneath this picture, "Head up, chin in, chest raised, abdomen

pulled in," and more important than all, "Lumbar spine flat." The shoulders and arms may be allowed to take care of themselves if these other requirements can be met.

How shall we cultivate and establish good posture?

First, by holding its image before the child in ourselves and counting upon the strength of the child's imitative impulses. By insisting upon certain periods of rest, especially after the food intake, in which the child's body is so placed in recumbency that the desired standing positions are emphasized, perhaps exaggerated. Sometimes, by stimulating the action of the intestines by skillfully given abdominal massage. In certain cases, by aiding the child to hold up its viscera and maintain its proper spinal curves by temporary employment of light braces. The muscles and ligaments are thus enabled to take up slack and regain their tone. By striving to strengthen these muscles and make habitual these attitudes by carefully supervised exercises, simple in character, few in number, but meticulous as to "form." By most careful regulation of diet and general pediatric control.

These rest periods and exercises must be carefully supervised else they will yield no results. They must be taken every day and preferably twice a day, in twenty minute or half hour periods, at times when the child is not fatigued by other exercise. The child must be actually taught, not shown—stimulated by example as well as by precept. With the younger children the exercise may be transformed into games and plays, and an older brother or sister may be made instructor without detriment to his own figure and health.

It is not an endless task. The physiological laws of postural tonus as we have seen earlier in this paper, aid us at every turn. The exercises are not left in the gymnasium, but continued in walking and standing and sitting. Fortunately we may inculcate good as well as bad habits. The laws of both are the same.

Now for the other side of the picture. From the earliest times the armies of conquering nations have been examples of good posture. Sculptors of all ages have vivified their subjects by making them sit and stand in these attitudes alike essential to true repose and poise and strength and alertness. Snapshot pictures of athletes straining at their tasks, calling forth unconsciously every last ounce of endurance, show perfect posture in every line.

Quite apart from the medical considerations, important and impressive as we believe them to be, this question of faulty posture cannot be lightly passed over. Today quite as much as ever before, perhaps more than ever before, the potential workers of the world, our children, must not only be educated to do their mental sums; to be physically and spiritually clean. They must be taught to embody these acquirements in their carriage, and to gain not alone good health, but that real and subtle thing called personal presence. In this there is no more important element than the impression of mental poise and of physical efficiency which good posture invariably conveys.

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†The reprint from which this article was taken was illustrated, but the REVIEW is unable to print the photographs.

Sampson on Physiotherapy

By A. B. HIRSH, M. D.

Physiotherapy Technic: A Manual of Applied Physics, by C. M. Sampson, M. D., formerly of the Physiotherapy Service, Walter Reed, U. S. Army General Hospital, Washington, D. C.; formerly Chief of Physiotherapy Service, U. S. Army General Hospital No. 9, Lakewood, N. J.; formerly Chief of Physiotherapy Service, U. S. Army General Hospital No. 41, Fox Hills, Staten Island, N. Y., later Hoff General Hospital; formerly Reconstruction Officer, U. S. Public Health Service Hospital No. 61, Fox Hills, Staten Island, N. Y.; later U. S. Veterans' Bureau Hospital No. 61; formerly in charge of reconstruction, U. S. Public Health Service Hospital No. 70, New York City. With eighty-five illustrations. Published by C. V. Mosby Company, St. Louis, 1923. Pp. 443, $6.50.

Here we finally have the first comprehensive American work on Physiotherapy. It is written by one who, after success in private practice, as anatomical instructor in a medical school, then spending a long period in the research laboratory of an electrotherapic instrument works, finally made a notable success when in charge of at least two of the largest war hospital physiotherapy clinics on record.

To the several hundred Aides who served under his leadership and attended his lectures, the marked personal note on every page

of Dr. Sampson's work will sound strikingly familiar. If other readers feel that undue emphasis is laid on many of his statements and that not infrequent exparte arguments add to the more scientific side of the text, be it remembered that opposition within and without the profession had met every advance in technic, and that much credit is due the doctor for the energy and skill he displayed in meeting antagonism and so advancing this invaluable addition to other methods for relieving disability.

Stress is laid in the opening chapter on the absolute need for proper technic and that a trained physician must act as clinic director. Sharply defined distinctions are then drawn between the three forms of heat, conductive, convective and conversive, with the special indications for each variety. The latter includes, of course, high frequency current, the mechanics of which are fully explained, and the reasons given for each part of the machine in which it originates. The series of cuts used to illustrate the latter are by far the clearest known to the reviewer. Diathermy (and not diathermia, the Latin terminology of the author) is given 32 pages, and no better description exists in the English language. Indeed, one leaves the reading of the only two other works wholly on diathermy in the English language with far less satisfaction than from the clear-cut details on diathermy here recorded. He divides the current into (1) sedative and (2) stimulating, the indications and technic of one varying markedly from the other. Electrodes of Crookes' metal are insisted on, and the use of the "cuff," as compared with the plate electrode, is gone into; and, in connection with the former, woven elastic bandaging advised to allow for swelling under passage of current. Autocondensation as well as indirect and modified diathermy are next explained, and in this connection the value and use of the non-vacuum glass electrode shown. The superiority of the non-vacuum over the vacuum instrument is maintained.

The chapter on static currents differs from the accepted view in that only the "wave" (or "condenser" current of the author) has the patient connected to the positive pole of the machine. He also attaches a large leyden jar to each pole, to activate the discharge, when using the wave. Of value are the directions for avoiding difficulties usually met in working the apparatus. Exception should, however, be taken to the "grounds" in the cuts on pages 150 and 15 , both being attached to the same wire, possibly an oversight;

better output from the machine follows their having separate routes to and from the earth.

Nowhere, to the reviewer's knowledge, can the reader find a more enlightening and down to date summary of the ultraviolet ray than is found here, and this applies as well to its physics and sources of supply as to the ever-widening range of its therapeutics.

The chapter on X-ray therapy in non-malignant conditions carries much information that will prove novel to Aides who did not attend lectures by Dr. Sampson in the last months at Fox Hills. Many conditions were cleared up by this technic, either alone or in conjunction with actinotherapy, that failed under all other methods. This latter combination, one of the most important yet proposed, originated with the author, being used in serious cases of malignancy as well as others. Especially valuable is the chapter on successful treatment of X-ray burns, both acute and chronic, also first suggested by him.

Galvanic currents are clearly explained, plain and sinusoidal, for muscle and nerve diagnosis by the usual methods or by the condenser instrument. The same applies to the faradic current, given either by the older transformer or by the Bristow coil. The author devotes a separate chapter to a comparison of interrupted galvanic and galvanic sinusoidal currents. What he has to say on peripheral nerve wounds, so often met in the industries as well as in war injuries, is worthy of repeated study; his original use of the negative galvanic for that otherwise intractable, painful complication, causalgia, needs special mention.

Massage comes next in order of utility in physiotherapy and, with mechanical vibration is well summarized and illustrated by snapshots. The chapter on hydrotherapy, though brief, carries all essential points of use in physical treatments. The Baruch neuromuscular reaction (cabinet bath followed by the shower), the whirlpool, the contrast bath, the continuous bath, each is described in turn.

The author's aim has been to avoid making the book a cyclopedia of diseases and their treatment; rather, to give general principles. He does, however, go into details on arthritis, locomotor ataxia, pyorrhoea alveolaris, hay fever and some pelvic affections, in which an extended experience had evolved valuable new technic.

All who ever heard Dr. Sampson devote an hour to describe

"trouble shooting" will prize the book even if for only this well detailed chapter on removing difficulties in use of physiotherapy apparatus. Its text proves him to be the practical electrician throughout.

Adapting physiotherapy to private practice or general hospitals is well told, as are the obstacles apt to be met in bigoted, uninformed physicians who oppose its advance because not yet taught in the colleges.

The entire first printing, 10,000 copies, of this work is said to have been taken by dealers when issued, and it behooves the progressive Aide to procure her own copy for study and guidance.

Here and There

The Red Cross First Aid car has been re-established and will traverse the railroads of the country giving first aid. It has a lecturing room, living quarters for the staff and room for thirty beds in case of accident or emergencies.

More than fifty disabled veterans of the World War already have taken advantage of Henry Ford's offer of free hospitalization in the big Ford Hospital in Detroit. All the veterans are admitted as are private patient's, and are treated on the same basis.

Arrangements for opening the hospital services free of charge to all disabled veterans of Michigan needing treatment were made a few weeks ago at a meeting between Alvin Owsley, national commander of the American Legion, Henry Ford, Edsel B. Ford and Dr. Robert B. Harkness, Legion State Commander.

Treatment in the Ford Hospital also will be provided in extreme cases of destitute families of former service men, their children needing hospitalization, when designated by Legion headquarters in Detroit.

The "Dugout" at 20 E. 58th Street, New York City, a work shop for ex-service men, was recently destroyed by fire. The losses in material and finished articles amounted to about $10,000. The work, although crippled for a time, will be carried on in an adjoining building. The New York Association of P. T.'S formerly held meetings there.

The "Canteen," which is being carried on by Miss Brooks for ex-service men and women, has moved to Seabright for the summer months.

The Cleveland chapter of the A. P. A. has proved to be a most instructive and progressive organization. Here is the program for last season:

"Spastic Paralysis," Dr. Bauman.
"The Care of the Crippled Child," Dr. Stern.
"Static and Postural Deformities," Dr. Feis.
"Bones," Dr. Willis.
"Tubercular Conditions," Dr. Heyman.
"Posture," Dr. Dickson.
"European Clinics," Dr. Reich.
"Nutrition," Miss McNab.

Ruth Bird, "Birdie", was married in August, to Frank Roy Miller.

Miss Leighow has been ordered to Dawson Springs, Kentucky.

Miss Laura Sandsbury, who has had charge of the P. T. Department at Mobile, Alabama, has been transferred to Alexandria, Louisiana.

Miss Florence West has resigned from the Veterans' Hospital at Gulfport, Mississippi, and is taking the P. T. course at Harvard.

Dr. William J. Tindall has been transferred from St. Louis to the Veterans' Hospital at New Haven Connecticut.

M. Estelle Angier, P. T., for three years secretary of the National Society of Reconstruction Aides, has tendered her resignation to the organization. No successor has been chosen. Following Article III of the constitution, the aide named will come from the physiotherapy ranks.

Miss Bobbs who has had charge of the P. T. Department at the Veterans' Hospital at Dawson Spring, Kentucky, has resigned and taken a position at Dr. Wolf's Clinic, New York City.

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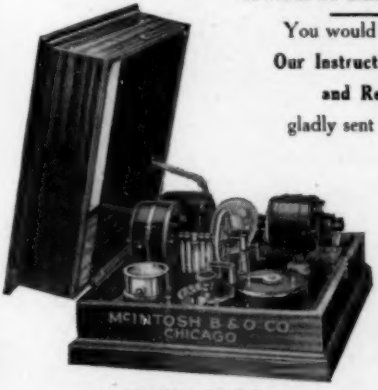

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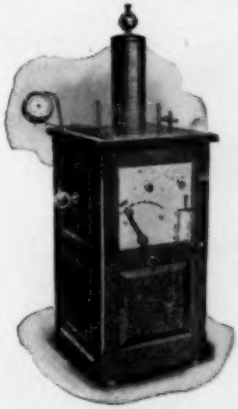

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